REMARKS

Claims 1-14 are rejected under 35 USC §112, Claims 1-13 are rejected under 35 USC §102, Claim 1-14 are rejected under 35 USC §103 and Claims 1-14 are rejected under the judicially created doctrine of obviousness-type double patenting. The applicants respectfully traverse these rejections and request reconsideration of the application in view of the above amendments and the following remarks.

The Specification and Claims 1, 2, 5, 6, 7 and 14 have been amended and Claim 37 has been added. None of these changes constitute new matter since this clarification of the claims is supported by the original disclosure.

Claims 1-14 were rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Specifically, the Office Action suggests that in Claim 1 "the aromatic product" has no step of production and lacks clear antecedent basis, in Claims 2-4 the term "the silicon to gallium atomic ratio" lacks antecedent basis, in Claims 5-7 it is unclear what percentage of Pt (mole, volume or mass) is intended, and in Claim 14 it is unclear whether the sodium form of the catalyst is the catalyst or its precursor.

Claim 1 has been amended and now reads in part "an aromatic product". This change in language has been made to Claim 1 to clarify the claimed subject matter without intending to narrow the scope of the claims.

Claim 2 has been amended and now reads in part "the catalyst has a silicon to gallium atomic ratio (Si/Ga) greater than 5". Since Claim 2 is dependent on Claim 1 which refers to "at least

one catalyst", proper antecedent basis has been established. This change in language has been made to Claim 2 to clarify the claimed subject matter without intending to narrow the scope of the claims.

Claims 5, 6 and 7 have been amended and now read in part "0.05wt% to 3wt%", "0.2wt% to 2wt%" and "0.2wt% to 1.5wt%", respectively. Support for this language is found on page 14, line 11 and page 15, line 12-14, and line 22 which report loading of platinum as weight percent ("wt%"). The Specification at the first full paragraph on page 11, lines 3-8, has also been amended to include this language. This change in language has been made to Claims 5, 6 and 7 and the Specification to clarify the claimed subject matter without intending to narrow the scope of the claims.

Claim 14 has been amended and now reads in part "wherein the sodium form of the zeolite is represented as: $|Na_x \cdot (H_2O)_z|[Ga_xSi_yO_{2y+3x/2}]$-**MFI** where x=0.1-25; y=60-100; and z=0.1-10. The Specification at the third full paragraph on page 8, lines 18-21, has also been amended to include this language. This change in language has been made to Claim 14 to clarify the claimed subject matter without intending to narrow the scope of the claims.

A new paragraph has been added on page 12 and reads as follows:

A zeolite catalyst may be synthesized by

a) preparing a zeolite having silicon and gallium in the framework;

b) depositing platinum on the zeolite; and

c) calcining the zeolite.

The catalyst may subsequently be treated first with hydrogen, second with a sulfur compound; and then again with hydrogen.

Support for this language is found in Claims 15 and 21 as originally filed, now withdrawn. Claim 37 has been added to include this language in the claimed invention.

Claims 1-13 were rejected under 35 USC 102(b) as being anticipated by U. S. Patent no. 4,766,265 to Desmond et al ("Desmond"). Specifically, the Office Action suggests that Desmond discloses a process of aromatization of alkanes, such as ethane to aromatics, in the presence of a catalyst containing gallium zeolite having ZSM-5 structure with a Si/Ga ratio of 10:1 - 100:1 on which platinum has been deposited and at a temperature of 500-700°C, a pressure of ambient to 20 atm and a space velocity from about 0.1 to about 50.

Desmond discloses a process for the conversion of ethane to liquid aromatic hydrocarbons with a catalyst promoted with rhenium and a metal selected nickel, palladium, platinum, rhodium and iridium (Abstract; col., 3, lines 45-49; col. 4, lines 17-20; col. 7, lines 40-42). Rhenium is a required and essential component of the metal deposited on the zeolite catalyst disclosed in Desmond.

Claim 1 has been amended and now reads in part "zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited". Support for this language is found on page 8, line 8-10 and on page 9, line 22, through page 10, line 3. This change in language has been made to Claim 1 to clarify the claimed subject matter. This change in language has been made to the claims to clarify the claimed subject matter which now incorporates subject matter not anticipated by Desmond.

Claim 14 is rejected under 35 USC 103(a) as being unpatentable over Desmond. Specifically, the Office Action suggests that Desmond discloses a process of aromatization of alkanes as described above and the sodium form of gallosilicate disclosed on page 8, lines 18-21, of the present application and claimed in Claim 14 is well-known in the art.

Desmond does not teach, disclose or suggest at least one catalyst comprising a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited. As noted above, Desmond requires the presence of rhenium deposited on the zeolite.

Every limitation in the claims must be given effect rather than considering one in isolation from the others [In re Geerdes, 491 F2d 1260, 180 USPQ 789(CCPA 1974)]. The patentable difference of the present invention over the reference is that the catalyst of the claimed invention is a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited.

MPEP §2142 establishes the criteria for establishing a prima facie case of obviousness and requires some suggestion or motivation to modify the reference. Such suggestion or motivation for a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited did not exist. MPEP§2142 also requires a reasonable expectation of success. While it may have been obvious-to-try a process for the aromatization of hydrocarbons using a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited, obvious-to-try is not equivalent to a reasonable expectation of success. Further, according to MPEP§2142, the prior art reference must teach or suggest all the

claim limitations. The cited reference does not teach or suggest using a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited for a process for the aromatization of hydrocarbons.

Even if a prima facie case of obviousness were established by the cited reference, the unexpected results of the claimed invention would satisfy the requirements of patentability. As shown in the attached Affidavit under 37 CFR §1.132, in a process for aromatization of alkanes zeolite catalysts were compared. One was a catalyst of the claimed invention, a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum had been deposited (Example 1). Another was a catalyst as in Desmond, a zeolite having gallium and silicon in the framework on which platinum and rhenium had been deposited (Comparative Example 1). The results shown in the Affidavit for Example 1 demonstrate the improvements and unexpected results of the claimed invention and distinguish the claimed invention from Desmond. In a process for aromatization of alkanes a catalyst of a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum had been deposited has better performance in selectivity to aromatics, such as benzene, toluene and xylene (BTX) than that for a catalyst of a zeolite having gallium and silicon in the framework on which a platinum and rhenium. The effect is even more apparent when the catalyst has been treated with first with hydrogen, second with a sulfur compound; and then again with hydrogen as shown in Table 2 of the Affidavit and claimed in new Claim 37.

Claims 1-13 were provisionally rejected under the judicially created doctrine of obviousness-type double patenting and Claims 1-14 were provisionally rejected under 35 USC §103(a) as being obvious over copending application no. 10/748,418.

Obviousness-type double patenting is defined as when claims in a patent application are an obvious variation of the invention defined in a claim in a patent (MPEP §804). The analysis employed in an obviousness-type double patenting rejection parallels the guidelines for an analysis of a 35 USC §103 obviousness determination. If claims are unobvious under 35 USC §103, there can be no double patenting.

The examiner has apparently confused domination with obviousness-type double patenting. Domination occurs when a patent has a broad or generic claim which reads on an invention defined by a narrower or more specific claim in another patent. Domination is not double patenting, *per se*. Domination is an irrelevant fact since a later invention may be validly patented though dominated by an earlier patent. In re Kaplan et al, 229 USPQ 678 (CAFC 1986). Further, the overlapping of claims is not a significant or controlling factor in obviousness-type double patenting. In re Longi et al, 225 USPQ 645 (CAFC 1985).

The proper concern of obviousness-type double patenting is the improper extension the patent right. The examiner has apparently defined the patent right as being a process for aromatization of alkanes with a ZSM-5 catalyst on which platinum has been deposited. However, the examiner has failed to explain how a process for aromatization of alkanes with a zeolite catalyst having gallium and silicon in the framework on which platinum has been deposited could be considered an improper extension of the patent right. Assuming a patent issues from the

present application, protection of the applicants' patent right after the expiration of patents which issue from copending application no. 10/748,418 will not affect the public's free use of such patents any more than other's patent rights in a process for aromatization of alkanes would.

Obviousness-type double patenting is analogous to the non-obviousness requirement of 35 USC 103. In re Braithwaite, 154 USPQ 29 (CCPA 1967); In re DeBlauwe, 222 USPQ 191 (CAFC 1984). The criteria to establish a prima facie case obviousness is stated in MPEP §2142. First, MPEP §2142 requires some suggestion or motivation to modify the reference. Such suggestion or motivation to modify ZSM-5 on which platinum has been deposited to a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited did not exist. MPEP§2142 also requires a reasonable expectation of success. While it may have been obvious-to-try a process for the aromatization of hydrocarbons using a zeolite having gallium and silicon in the framework on which a metal consisting essentially of platinum has been deposited instead of a ZSM-5 on which platinum has been deposited, obvious-to-try is not equivalent to a reasonable expectation of success. Further, according to MPEP§2142, the prior art reference must teach or suggest all the claim limitations. The copending application teaches using ZSM-5 on which platinum has been deposited for a process for the aromatization of hydrocarbons.

The provisional rejections under the judicially created doctrine of obviousness-type double patenting and under 35 USC 103 (a) as being obvious over copending application no. 10/748,418 do not meet the criteria for establishing obviousness-type double patenting or a prima facie case of obviousness.

A Petition and Fee for Extension of Time under 37 CFR §1.136(a) is being filed concurrently with this paper. The Commissioner is hereby authorized to charge the fee of $120.00 under 37 CFR §1.17(a)(1) and any additional fees due by filing this paper or to credit any overpayment to Account No. 502025.

On the basis of the above amendments and remarks, reconsideration of this application is requested and its allowance of the claims is requested at the examiner's earliest convenience. No new matter has been added.

Respectfully submitted,

Jim Wheelington
Reg. No. 33,051

SABIC Americas, Inc.
SABIC Technology Center
1600 Industrial Blvd.
Sugar Land, Texas 77478
(281) 207-5719
Customer No. 30691